C2 Concl'd

wherein the second switching electrode is a dual layer structure comprised of a transparent conducting layer that is in contact with said ohmic contact layer and a non-transparent metal layer that extends over the transparent conductive material and that wraps around an end of the transparent conductive material so as to contact the ohmic contact layer.

Sub #1

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17. (Amended) A thin film transistor (TFT) sensor according to claim 15, wherein the transparent conducting layer contacts a side of the active layer.

REMARKS

Claims 1, 3-4, 9-10 and 15-18 were pending. This Amendment cancels claims 10 and 16, and amends claims 1, 15, and 17. Reexamination and reconsideration of the subject application and pending claims 1, 3-4, 9, and 15, and 17-18 (as amended) are respectfully requested.

The April 1, 2002 Office Action objected to claims 15-17 under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner noted a lack of an antecedent basis for "said ohmic contact layer" in claim 15. A related issue was noted in claim 16. In response, claim 15 is amended to provide an antecedent basis of an ohmic contact layer. This action also addresses the rejection of claim 17. Claim 16 is cancelled in view of other amendments made to claim 15 (discussed subsequently).

The USPTO rejected claims 1, 4, 9, and 15 under 35 U.S.C. §103(a) as being unpatentable over Kawai et al. (USPAT 5,821,133) in view of applicant's admitted prior art. In

response, claims 1 and 15 are amended to clearly distinguish over the relied upon references. The amendment to claim 1 address the rejections of dependent claims 4 and 9.

The Patent Office noted that applicant's admitted prior art discloses a sensor TFT and a storage capacitor. The Patent Office also found that Kawai et al. discloses a switching TFT that controls the release of stored charges to an external circuit, and that Kawai's switching TFT includes a gate electrode (26), an insulating layer (31), an active layer (33), an ohmic contact layer, and dual layered source and drain electrodes. The Patent Office also found that those dual layered electrodes include a transparent conductive material in contact with the ohmic contact, and a metal material on the transparent conductive material.

In Kawai et al., the transparent conductive material contacts the ohmic contact layer, but the metal layer does not. This is in contrast to amended claims 1 and 15. In the words of those claims, with regard to the metal material, --a metal material that extends over the transparent conductive material and that wraps around an end of the transparent conductive material to contact the ohmic contact layer. --

The USPTO also rejected claims 3, 10, 16, and 17 under 35 U.S.C. §103(a) as being unpatentable over Kawai et al. (USPAT 5,821,133) and applicant's admitted prior art, and further in view of den Boer et al. (USPAT 5,656,824). Additionally, claim 18 was rejected under 35 U.S.C. §103(a) as being unpatentable over Kawai et al. (USPAT 5,821,133) in view of den Boer et al. (USPAT 5,656,824). With all respect to the Examiner, the rejections of claims 3, and 17-18 are traversed, while claims 10 and 16 are cancelled in view of amendments made to claims 1 and 15.

The rejections of claim 3 and 17 are traversed because those claims depend from allowable base claims. However, since amended claims 1 and 15 are subject to rejections similar to those asserted against claims 10, 16, and 18, a basis for traversing those rejections is discussed below.

Claims 10, 16, and 18 stand rejected in view of den Boer's teaching of a source electrode comprised of a transparent conducting material 42 and a (non-transparent) metal material 40 that both contact a contact layer 34. Amended claims 1 and 15 include related limitations.

As best understood, den Boer discloses a metal material 40 on a contact layer 34, and a transparent material 42 on the metal material 40. In contrast, claims 1 and 15 provide for a -- transparent conductive material that extends over and contacts the ohmic contact layer, and a metal material that extends over the transparent conductive material and that wraps around an end of the transparent conductive material to contact the ohmic contact layer.-- Claim 18 includes similar limitations. These limitations are not found in or suggested by the relied upon prior art, when taken alone or together.

The foregoing distinctions are important, with advantageous being taught in the subject application. The Examiner's attention is directed to the subject application, beginning on line 11 of page 8. There, the inventors describe how the transparent material functions as a hole barrier, which results in a reduced OFF state leakage, while the metal material maintains the ON state current. The Examiner's attention is also directed to Kawai et al.'s lack of disclosure related to transparent materials and metal materials that both contact the contact layer. Thus, Kawai et al. does not suggest the advantages taught by the subject application.

In view of the foregoing, claims 1, 3-4, 9, 15, 17, and 18 are believed allowable. If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at (202) 624-1285 to discuss the steps necessary for placing the application in condition for allowance. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911. A duplicate copy of this sheet is enclosed.

Respectfully submitted,
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Attachment: Marked-up Version Showing Amended Claim Changes

ATTACHMENT

MARKED-UP VERSION SHOWING AMENDED CLAIM CHANGES

1. (Amended) An optical detecting sensor, comprising:

a sensor thin film transistor (TFT) generating optical current [by incident light reflected from an object];

a storage capacitor storing charges of the optical current generated in the sensor thin film transistor;

a switching TFT controlling a release of the stored charges [of the storage capacitor to an external circuit or display of an image of the object], the switching TFT having a gate electrode, an insulating layer on the gate electrode, an active layer on the insulating layer, an ohmic contact layer on the active layer, and dual layered source and drain electrodes that are each comprised of a [first source and drain electrodes made from a] transparent conductive material that extends over and contacts [that is in contact with] the ohmic contact layer, and a [from second source and drain electrodes comprised of a] metal material that extends over the transparent conductive material and that wraps around an end of the transparent conductive material to contact the ohmic contact layer [on the first source and drain electrodes].

15. (Amended) A thin film transistor (TFT) sensor, comprising:

a sensor TFT having a gate electrode and spaced apart first and second sensor electrodes; and

a switching TFT comprised of:

a gate electrode on a transparent substrate;

an insulating layer over the gate electrode;

a semiconductor layer on the insulating layer and adjacent the gate electrode, wherein the semiconductor layer includes an active layer and [a] an ohmic contact layer;

spaced apart first and second switching electrodes on the semiconductor layer that define a channel region, wherein the second switching electrode electrically contacts the contact layer; and

a storage capacitor having a first storage electrode and a second storage electrode, wherein the second storage electrode of the storage capacitor connects to the first sensor electrode and to the second switching electrode;

wherein the second switching electrode is a dual layer structure comprised of a transparent conducting layer that is in contact with said ohmic contact layer and a non-transparent metal layer [over said transparent conductive layer] that extends over the transparent conductive material and that wraps around an end of the transparent conductive material so as to contact the ohmic contact layer.

17. (Amended) A thin film transistor (TFT) sensor according to claim [16] 15, wherein the transparent conducting layer contacts a side of the active layer.